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CORRES CONTROL
INCOMING LTR NO

D4168 RF94

DUE DATE

ACTION

DIST	LTR	ENC
BURLINGAME, A H		
BUSBY, W S		
CARNIVAL, G J		
CORDOVA, R C		
DAVIS, J G		
FERRERA, D W		
FRAY, R E		
GEIS, J A		
GLOVER, W S		
GOLAN, P M		
HANNI, B J		
HEALY, T J		
HEDAHL, T G		
HILBIG, J G		
HUTCHINS, N M		
JACKSON, D T		
KELL, R E		
KUESTER, A W		
MARX, G E		
McDONALD, M M		
McKENNA, F G		
MORGAN, R V		
PIZZUTO, V M		
POTTER, G L		
SANDLIN, N B		
SATTERWHITE, D G		
SCHUBERT, A L		
SCHWARTZ, J K		
SETLOCK, G H		
STIGER, S G		
TOBIN, P M		
VOORHEIS, G M		
WILSON, J M		
BICHER C	X	
HOLLOWELL L	X	

RCVD W/O ENC

CORRES CONTROL	X	X
ADMN RECORD/080		
[redacted]		

Reviewed for Addressee
Corres Control RFP

11-10-94 DATE BY

Ref Ltr #

DOE ORDER # 5400.1

Department of Energy

ROCKY FLATS FIELD OFFICE
P O BOX 928
GOLDEN COLORADO 80402 0928

Nov 10 1 59 PM '94

45183

EG&G
ROCKY FLATS PLANT
CORRESPONDENCE CONTROL

NOV 0 9 1994

94-DOE-11425

Mr Martin Hestmark
U S Environmental Protection Agency, Region VIII
ATTN Rocky Flats Project Manager, 8HWM-RI
999 18th Street, Suite 500, 8WM-C
Denver, Colorado 80202-2405

Mr Joe Schieffelin, Unit Leader
Hazardous Waste Facilities
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Gentlemen

Enclosed are meeting minutes from a meeting held with your staff on October 21, 1994, regarding source area identification for the Colorado Department of Public Health and Environment Conservative Screen for Operable Unit No 5

If you have any questions, please contact Kurt Muenchow at 966-2184

Sincerely,

Steven W Slaten
IAG Project Coordinator
Environmental Restoration

Enclosure

[redacted] w/ Enclosure
C Gesalman, EM-453, HQ
B Lavelle, EPA

cc w/o Enclosure
P Singh, ORNL
C Bicher, EG&G

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ADMIN RECORD

A-OU05 000661

-15183

MEETING MINUTES

Meeting Date/Time: October 21, 1994/0830

Meeting Location: Advanced Sciences, Inc (ASI), Lakewood, CO

Meeting Subject: Identification of Source Areas/Areas of Concern for CDPHE Conservative Screen, Operable Unit No 5, Rocky Flats Environmental Technology Site

Attendees

Name	Affiliation
Carol Bicher	EG&G
Robert Cygnarowycz	EG&G
Doug Dennison	ASI
Fred Duncan	Dames & Moore
Dave Gallaher	ASI
Mary Lee Hogg	ICF Kaiser
Scott Hollowell	EG&G
Paul Jordan	ASI
Mike Kelly	Dames & Moore
Bonnie Lavelle	EPA
Ed Mast	EG&G
Elizabeth Mooney	Dames & Moore
Kurt Muenchow	DOE
Rotha Randall	EG&G
Joe Schieffelin	CDPHE
Mary Siders	EG&G
Paul Singh	ORNL/DOE

Copies of materials that were handed out during this meeting are attached

Introduction C Bicher restated the purpose of this meeting D Dennison introduced the ASI and Dames & Moore personnel who would be presenting the source area information

P. Jordan - Discussed the handling of data and the CDPHE screening process Discussed the presentation of data and the types of information that can be presented using ArcView All results exceeding the CDPHE screening values (detection limit for organics and background mean plus two standard deviations for inorganics) for all media pertinent to OU5 were displayed

K. Muenchow - Questioned whether data from implementation of TM15 are included

P. Jordan - Responded that data from implementation of TM15 are not available yet and are not included in this presentation The data for only IHSS 115 were presented, and a source area that encompasses the previously defined area of IHSS 115, including IHSS 196, and extending to Woman Creek was proposed

B. Lavelle - Questioned whether Woman Creek should be included in a source area specific to a particular IHSS Inclined to not tie specific segments of Woman Creek to an IHSS but treat the drainage as a system

K. Muenchow - Agreed with Bonnie's view Questioned whether the data support treating Woman Creek as a complete system

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P. Jordan - Responded that many constituents exceed the CDPHE screening values in many segments of Woman Creek

B. Lavelle - Questioned if some segments pass the CDPHE screen while others fail should each segment be treated separately

C. Bicher - Suggested that all of the proposed source areas be displayed so that all attendees could see the way in which Woman Creek is proposed to be treated

P. Jordan - Presented the proposed source areas - 1 IHSS 115 source area as described above, 2 all 133-Series IHSSs as a single source area, 3 the Surface Disturbance South of the Ash Pits as a single source area, 4 the Surface Disturbance West of IHSS 209 as a single source area, and 5 the C-1 and C-2 Ponds and the segment of Woman Creek between the two ponds as a single source area Also discussed that only calcium exceeded the CDPHE screening value at IHSS 209, so this IHSS was not delineated as a source area

J. Schieffelin - Related that the CDPHE screen is designed to eliminate areas from further consideration rather than include them Agreed with the proposed IHSS 115 and surface disturbance source areas but questioned the inclusion of all of the 133-Series IHSSs and the C-Ponds into single source areas If these areas are treated as smaller units, it may be possible to eliminate some parts of these areas

B Lavelle - Areas with similar contamination should be included in a single source area/area of concern that is carried throughout the risk assessment process

K. Muenchow - Prefer including all of the ash pits into a single source area rather than treating each one separately

J. Schieffelin - Expressed concern that this approach defeats the purpose of the CDPHE screen

K. Muenchow - Questioned whether there are sampling locations in the IHSS 133 area that do not have constituents that exceed the CDPHE screening values (These data were displayed)

J. Schieffelin - Presented what he feels should be the source areas in the IHSS 133 area (e g , each of the ash pits as a different source area)

B. Lavelle - Expressed concern that this presentation may not portray a realistic approach to the risk assessment

B. Cygnarowycz - Related that the Feasibility Study (FS) is currently considering IHSSs 133 1 to 133 4 as one unit and IHSSs 133 5 and 133 6 each as individual units

K. Muenchow - The CDPHE screen seems to apply well to areas with a relatively large geographical separation, however, in the case of the ash pits, breaking these units into individual source areas does not seem to make sense

J. Schieffelin - The CDPHE screen is designed to eliminate those areas that don't have risk and shouldn't be addressed in the FS

B. Lavelle - The recently developed risk assessment agreement states that if an area is eliminated by the CDPHE screen, the area of concern is redrawn and the data in the eliminated area are not included in future risk assessment evaluations The small areas that would remain by separating the ash pits into individual units that are not meaningful to the baseline risk assessment

M. Hogg - Based on the metals, particularly manganese, data for subsurface soil samples in the IHSS 133 area, none of the individual IHSSs would be eliminated by the CDPHE screen Based on this information, treating theses IHSSs as a single source area appears to make sense

J. Schieffelin - Agreed that this grouping of the 133-Series IHSSs now appears to make sense

C. Bicher - Requested that stream sediment, pond sediment, and surface-water data be displayed so that treatment of Woman Creek and the C-Ponds could be discussed

B. Lavelle - One proposal would be to treat all surface water and sediments in Woman Creek and the C-Ponds as a single system The second proposal would be to treat Woman Creek as individual segments related to other IHSSs

R. Randall - OU6 treated the A-Series Ponds as one source area and the B-Series Ponds as another source area

K. Muenchow - Questioned whether sediments should be treated differently than surface water

R. Randall - In the case of OU6, each pond was treated as a separate source area and the stream sediments were treated as a separate source area

J. Schieffelin - Interested in how the C-Ponds are to be treated

C. Bicher - Suggested that the ponds should be separated for the CDPHE screen If the ponds do not pass the screen, then group them together for remaining risk assessment activities

B. Lavelle - Not comfortable with making decisions solely based upon the data and not considering the system as a whole It may be possible to treat the South Interceptor Ditch (SID) and Pond C-2 as one system and Woman Creek and Pond C-1 as another system

K. Muenchow - Questioned whether treating pond sediments and creek sediments together as one area of concern was a valid approach

M. Hogg - Suggested keeping them separate due to different exposure scenarios for the two sediment types A suspension model is being considered for the pond sediments whereas a different exposure scenario is being considered for the creek sediments

B. Lavelle - Suggested that keeping the creek and the pond together as a single system is appropriate

B. Cygnarowycz - For a FS standpoint, it is reasonable to keep the creek and the ponds together

B. Lavelle - Suggested keeping the creek and the ponds together for the purposes of the CDPHE screen but possibly aggregating them differently for the exposure assessment Suggested keeping Woman Creek and Pond C-1 together and the SID and Pond C-2 together and possibly separate them into a western half and an eastern half

A group consensus was reached on the following source areas (see attached maps) -

1. The IHSS 133 area,
2. The IHSS 115/196 area,
3. The Surface Disturbance West of IHSS 209,
4. The Surface Disturbance South of the Ash Pits,
5. Woman Creek and Pond C-1 system, and
6. South Interceptor Ditch (SID) and Pond C-2 system

Additional Discussions -

- A meeting date of November 18, 1994 was agreed to for the meeting to discuss data aggregation This meeting will be held at ASI's Office (405 Urban Street, Suite 401, Lakewood) beginning at 8 30 a.m

- The OU5 Exposure Assessment Technical Memorandum (TM) will need to be revised to address modified exposure parameters It was agreed that the changes in this TM would be highlighted to facilitate review

- Submittal of a follow-up letter rather than preparation of a toxicity TM to document use of toxicity factors from sources other than IRIS or HEAST was agreed to

- Bonnie Lavelle discussed additional EPA comments on the modeling TM pg 1/2

October 21, 1994 CDH Conservative Screen

Identification of Source Areas

introductions

Paul [illegible] - Data Descriptions

- goal - identify source areas assoc w/ OU5 that are mutually agreed upon by DOE/EPA/CDH
- for flagged nondetect - if less result replaced w/ det limit CDH Value mean + 2 std dev based on distr of data today looking at data above mean + 2σ dev or above det limit of organics
- reference handouts
- computer graphics - shows rads, metals, organics
- does not include data from TM 15 but most sampling locations ~~are~~ will be encompassed in source areas proposed today
- IHSS 115
  - propose Oakland, down south to creek
  - Bonnie - the creek is integrated, why break it out & group w/ IHSS
- Big picture = 5 source areas, proposed Joe - IHSS 115 OK, dust areas OK, but ash pits, maybe should be broken ~~out~~ down so as to drop out areas

pg 2/2

- IHSS 133.1 - 133.6
  Bonnie - risk assessment on one ash pit isn't very valid
  Joe - one hit hit in one ash pit will keep all in
  Marylee - break out western IHSS - they fail due to Manganese therefore all IHSS 133 will fail
  Consensus - group together but look at each one individually & if it could fall out make case and inform agency
- Woman Creek:
  SID and C2
  Creek and C_1
  stream sed & pond sed grouped
- IHSS 115 separate from Woman Creek; SID break @ IHSS border & throw in both
- IHSS 209 2 Calcium hits
  Joe - dont need to do anything
- Any difference in treating sed & SW?
  they will be collocating
- maps attached

Summary

CDHPE [signature]
EPA [signature]
DOE [signature]

MEETING FOR
SOURCE AREA IDENTIFICATION FOR OU5

DATE: **October 20, 1994**
TIME: **8:30 am**
LOCATION: **ASI's Lakewood, Colorado Office**

GOAL: **Identify source areas associated with OU5 that are mutually agreed upon by EPA, CDPHE, DOE, and EG&G.**

AGENDA:

INTRODUCTION	DOUG I. DENNISON, ASI
DATA DESCRIPTION	PAUL J. JORDAN, ASI
SOURCE AREAS	FRED DUNCAN, DAMES & MOORE
DISCUSSIONS	EVERYONE
CLOSURE	DOUG I. DENNISON, ASI

<u>LEGEND</u>

RADIONUCLIDES are in RED

METALS are in BLUE

ORGANIC COMPOUNDS are in GREEN

SUB-SURFACE SOIL	=	●
SURFACE SOIL	=	★
SEEP SEDIMENT	=	○
STREAM SEDIMENT	=	△
POND SEDIMENT	=	◊
SEEP WATER	=	+
SURFACE WATER	=	×
GROUND WATER	=	⊠

MEDIA : GROUNDWATER

GRP	CHEMICAL	NORM-LOG?	CDH VALUE
DISSOLVED	BARIUM	LOG	80 68
DISSOLVED	CALCIUM	NORMAL	120,550 94
DISSOLVED	CESIUM	LOG	379 22
DISSOLVED	COBALT	LOG	20 99
DISSOLVED	IRON	LOG	41 38
DISSOLVED	MANGANESE	LOG	16 88
DISSOLVED	POTASSIUM	LOG	1,106 76
DISSOLVED	RADIUM-226	NORMAL	0 48
DISSOLVED	STRONTIUM-89/90	NORMAL	0 96
DISSOLVED	URANIUM-238	LOG	6 26
TOTAL	ALUMINUM	LOG	910 89
TOTAL	ANTIMONY	LOG	28 90
TOTAL	ARSENIC	NORMAL	7 15
TOTAL	BARIUM	NORMAL	244 97
TOTAL	BERYLLIUM	LOG	5 18
TOTAL	CADMIUM	LOG	4 93
TOTAL	CALCIUM	LOG	47,309 83
TOTAL	CESIUM	LOG	378 36
TOTAL	CHROMIUM	LOG	10 76
TOTAL	COBALT	LOG	23 05
TOTAL	COPPER	LOG	13 14
TOTAL	IRON	LOG	944 59
TOTAL	LEAD	LOG	6 79
TOTAL	LITHIUM	LOG	23 05
TOTAL	MAGNESIUM	LOG	8 211 34
TOTAL	MANGANESE	LOG	41 63
TOTAL	MERCURY	LOG	2 35
TOTAL	MOLYBDENUM	LOG	46 57
TOTAL	NICKEL	LOG	19 62
TOTAL	POTASSIUM	LOG	1,469 17
TOTAL	RADIUM-226	LOG	3 29
TOTAL	SELENIUM	LOG	7 65
TOTAL	SILICON	LOG	11 967 43
TOTAL	SILVER	LOG	7 22
TOTAL	SODIUM	LOG	17,752 73
TOTAL	STRONTIUM	LOG	236 13
TOTAL	STRONTIUM-89/90	NORMAL	0 78
TOTAL	TIN	LOG	83 49
TOTAL	URANIUM-233/234	LOG	10 37
TOTAL	URANIUM-235	LOG	5 17
TOTAL	URANIUM-238	LOG	8 64
TOTAL	VANADIUM	LOG	15 37
TOTAL	ZINC	LOG	29 08

MEDIA POND SEDIMENT

GRP	CHEMICAL	NORM-LOG?	CDH VALUE
TOTAL	ARSENIC	NORMAL	7 30
TOTAL	BARIUM	NORMAL	190 67
TOTAL	CALCIUM	NORMAL	12,979 86
TOTAL	COPPER	NORMAL	25 78
TOTAL	IRON	NORMAL	21,379 01
TOTAL	MAGNESIUM	NORMAL	3 948 92
TOTAL	MERCURY	NORMAL	0 21

MEDIA : POND SEDIMENT

GRP	CHEMICAL	NORM-LOG?	CDH VALUE
TOTAL	NICKEL	NORMAL	17 35
TOTAL	POTASSIUM	NORMAL	2,353 84
TOTAL	STRONTIUM	NORMAL	156 26

MEDIA : SEEP SEDIMENT

GRP	CHEMICAL	NORM-LOG?	CDH VALUE
TOTAL	ANTIMONY	NORMAL	21 80
TOTAL	BERYLLIUM	NORMAL	1 64
TOTAL	NICKEL	LOG	12 86
TOTAL	POTASSIUM	LOG	1,076 32
TOTAL	URANIUM-233/234	NORMAL	1 58
TOTAL	URANIUM-238	NORMAL	1 56
TOTAL	ZINC	LOG	51 60

MEDIA STREAM SEDIMENT

GRP	CHEMICAL	NORM-LOG?	CDH VALUE
TOTAL	COPPER	LOG	12 30
TOTAL	SILVER	LOG	6 10
TOTAL	TRITIUM	LOG	151 51
TOTAL	ZINC	LOG	40 97

MEDIA SUB-SURFACE SOIL

GRP	CHEMICAL	NORM-LOG?	CDH VALUE
TOTAL	ANTIMONY	LOG	2 53
TOTAL	ARSENIC	LOG	2 42
TOTAL	BARIUM	LOG	5 72
TOTAL	BERYLLIUM	LOG	2 99
TOTAL	CADMIUM	LOG	0 05
TOTAL	CALCIUM	LOG	10 02
TOTAL	CHROMIUM	LOG	4 06
TOTAL	COBALT	LOG	2 75
TOTAL	COPPER	LOG	3 52
TOTAL	IRON	LOG	10 44
TOTAL	LEAD	LOG	3 51
TOTAL	MANGANESE	LOG	6 46
TOTAL	MOLYBDENUM	LOG	3 98
TOTAL	NICKEL	LOG	4 05
TOTAL	POTASSIUM	LOG	8 24
TOTAL	SILVER	NORMAL	24 50
TOTAL	SODIUM	NORMAL	1 657 73
TOTAL	STRONTIUM	LOG	5 26
TOTAL	THALLIUM	LOG	0 97
TOTAL	URANIUM-233/234	LOG	3 96
TOTAL	URANIUM-235	LOG	6 30
TOTAL	URANIUM-238	LOG	3 68
TOTAL	ZINC	LOG	5 16

MEDIA SURFACE SOIL

MEDIA : SURFACE SOIL

GRP	CHEMICAL	NORM-LOG?	CDH VALUE
TOTAL	ANTIMONY	LOG	15 55
TOTAL	CALCIUM	LOG	4,820 68
TOTAL	COPPER	LOG	15 54
TOTAL	LEAD	LOG	39 36
TOTAL	PLUTONIUM-239/240	NORMAL	4 04
TOTAL	SILVER	LOG	6 61
TOTAL	URANIUM-233/234	LOG	5 58
TOTAL	URANIUM-235	LOG	4 59
TOTAL	URANIUM-238	LOG	5 70
TOTAL	ZINC	LOG	58 85

MEDIA : SURFACE WATER

GRP	CHEMICAL	NORM-LOG?	CDH VALUE
DISSOLVED	CALCIUM	NORMAL	46 137 39
DISSOLVED	IRON	LOG	103 92
DISSOLVED	LITHIUM	LOG	30 88
DISSOLVED	MAGNESIUM	LOG	5 236 32
DISSOLVED	SODIUM	NORMAL	31 566 80
DISSOLVED	URANIUM-238	LOG	4 22
TOTAL	CALCIUM	NORMAL	45,422 42
TOTAL	LITHIUM	LOG	30 06
TOTAL	MAGNESIUM	LOG	5,548 02
TOTAL	PLUTONIUM-239/240	NORMAL	0 02
TOTAL	SODIUM	NORMAL	31,569 04
TOTAL	URANIUM-233/234	LOG	4 09
TOTAL	URANIUM-238	LOG	4 51

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LIST OF DETECTED ORGANIC COMPOUNDS
Number of Samples, Percent Detected, and Maximum Concentration

Sub-Surface Soil Samples

Constituent	Number of Samples	Percent Detect.	Maximum Concentration
Semi-Volatile Organic Compounds			
2-Methylnaphthanlene	82	14 6	15,000 (ug/kg)
Acenaphthene	80	23.8	31,000 (ug/kg)
Acenaphthylene	82	2 4	84 (ug/kg)
Anthracene	82	23.2	46,000 (ug/kg)
Aroclor-1254	76	11 8	960 (ug/kg)
Aroclor-1260	77	3 9	1,300 (ug/kg)
Alpha-BHC	77	1 3	15 (ug/kg)
Benzo(a)anthracene	82	26 8	48,000 (ug/kg)
Benzo(a)pyrene	82	25 6	43,000 (ug/kg)
Benzo(b)fluoranthene	82	26 8	48,000 (ug/kg)
Benzo(ghi)perylene	82	23 2	19,000 (ug/kg)
Benzo(k)fluoranthene	82	24 4	19,000 (ug/kg)
Benzoic Acid	80	21 3	974 (ug/kg)
Bis(2-Ethylexyl)phthalate	82	15 9	290 (ug/kg)
Butyl Benzy Phthalate	82	2 4	360 (ug/kg)
Chrysene	82	26 8	53,000 (ug/kg)
Di-n-butyl Phthalate	82	2 4	300 (ug/kg)
Dibenzo(a,h)anthracene	82	14 6	700 (ug/kg)
Dibenzofuran	82	17 1	20,000 (ug/kg)
Fluoroanthene	82	30 5	160,000 (ug/kg)
Fluorene	82	23 2	35,000 (ug/kg)
Heptachlor Epoxide	77	1 3	11 (ug/kg)
Indeno(1,2,3-cd)pyrene	81	21	22,000 (ug/kg)
Isophorone	82	1 2	82 (ug/kg)
Naphthalene	82	15 9	61,000 (ug/kg)
Pentachlorophenol	82	1 2	160 (ug/kg)
Phenanthrene	82	31 7	220,000 (ug/kg)
Phenol	82	4 9	140 (ug/kg)
Pyrene	82	31 7	150,000 (ug/kg)
Volatile Organic Compounds			
1,1,1-Trichloroethane	193	0 5	2 (ug/kg)
2-Butanone	157	5.1	69 (ug/kg)
4-Methyl-2-Pentanone	194	0 5	2 (ug/kg)
Acetone	181	9 9	280 (ug/kg)
Ethylbenzene	195	0 5	66 (ug/kg)
Methylene Chloride	195	14 4	66 (ug/kg)
Tetrachloroethene	195	13 3	920 (ug/kg)
Toluene	194	45 4	310 (ug/kg)
Total Xylenes	195	0 5	150 (ug/kg)
Trichloroethene	195	11 3	440 (ug/kg)

DRAFT

LIST OF DETECTED ORGANIC COMPOUNDS
Number of Samples, Percent Detected, and Maximum Concentration

Surface Soil Samples

Constituent	Number of Samples	Percent Detect.	Maximum Concentration
Semi-Volatile Organic Compounds			
2-Methylnaphthanlene	34	17 6	12,000 (ug/kg)
4,4'-DDT	74	1 4	21 (ug/kg)
Acenaphthene	60	33 3	44,000 (ug/kg)
Acenaphthylene	46	2 2	600 (ug/kg)
Aldrin	74	1 4	17 (ug/kg)
Anthracene	67	32 8	47,000 (ug/kg)
Aroclor-1254	74	12 2	3,900 (ug/kg)
Benzo(a)anthracene	53	52 8	45,000 (ug/kg)
Benzo(a)pyrene	57	38 6	41,000 (ug/kg)
Benzo(b)fluoranthene	58	41 4	49,000 (ug/kg)
Benzo(ghi)perylene	50	28	6,900 (ug/kg)
Benzo(k)fluoranthene	47	38 3	25,000 (ug/kg)
Benzoic Acid	29	55 2	770 (ug/kg)
Bis(2-Ethylexyl)phthalate	48	33 3	200 (ug/kg)
Butyl Benzy Phthalate	32	3 1	220 (ug/kg)
Chrysene	68	42 6	46,000 (ug/kg)
Di-n-butyl Phthalate	41	22	424 5 (ug/kg)
Di-n-octyl Phthalate	33	3	83 (ug/kg)
Dibenzo(a,h)anthracene	43	16 3	7,000 (ug/kg)
Dibenzofuran	40	27 5	20,000 (ug/kg)
Dieldrin	74	1 4	34 (ug/kg)
Endosulfan Sulfate	74	1 4	24 (ug/kg)
Endrin Ketone	74	1 4	36 (ug/kg)
Fluoranthene	69	56 5	140,000 (ug/kg)
Fluorene	63	28 6	39,000 (ug/kg)
Heptachlor Epoxide	74	1 4	10 (ug/kg)
Indeno(1,2,3-cd)pyrene	54	37	32,000 (ug/kg)
Isophorone	33	3	96 (ug/kg)
Methoxychlor	74	1 4	450 (ug/kg)
Naphthalene	57	17 5	41,000 (ug/kg)
Phenanthrene	77	46 8	170,000 (ug/kg)
Pyrene	73	52 1	120,000 (ug/kg)

LIST OF DETECTED ORGANIC COMPOUNDS
Number of Samples, Percent Detected, and Maximum Concentration

Pond Sediment Samples

Constituent	Number of Samples	Percent Detect.	Maximum Concentration
Semi-Volatile Organic Compounds			
Benzoic Acid	5	80	410 (ug/kg)
Di-n-Butyl Phthalate	4	25	110 (ug/kg)
Fluoranthene	4	25	140 (ug/kg)
Phenol	4	25	150 (ug/kg)
Volatile Organic Compounds			
Toluene	6	100	562 5 (ug/kg)

Seep Sediment Samples

Constituent	Number of Samples	Percent Detect.	Maximum Concentration
Semi-Volatile Organic Compounds			
Benzo(a)anthracene	4	25	38 (ug/kg)
Bis(2-ethylexyl)phthalate	4	50	80 (ug/kg)
Chrysene	4	25	41 (ug/kg)
Fluoranthene	4	50	97 (ug/kg)
Phenanthrene	4	50	82 (ug/kg)
Pyrene	4	50	97 (ug/kg)
Volatile Organic Compounds			
Acetone	7	42 9	17 (ug/kg)
Methylene Chloride	4	75	5 (ug/kg)
Tetrachloroethene	7	14 3	1 (ug/kg)

LIST OF DETECTED ORGANIC COMPOUNDS
Number of Samples, Percent Detected, and Maximum Concentration

Groundwater Samples

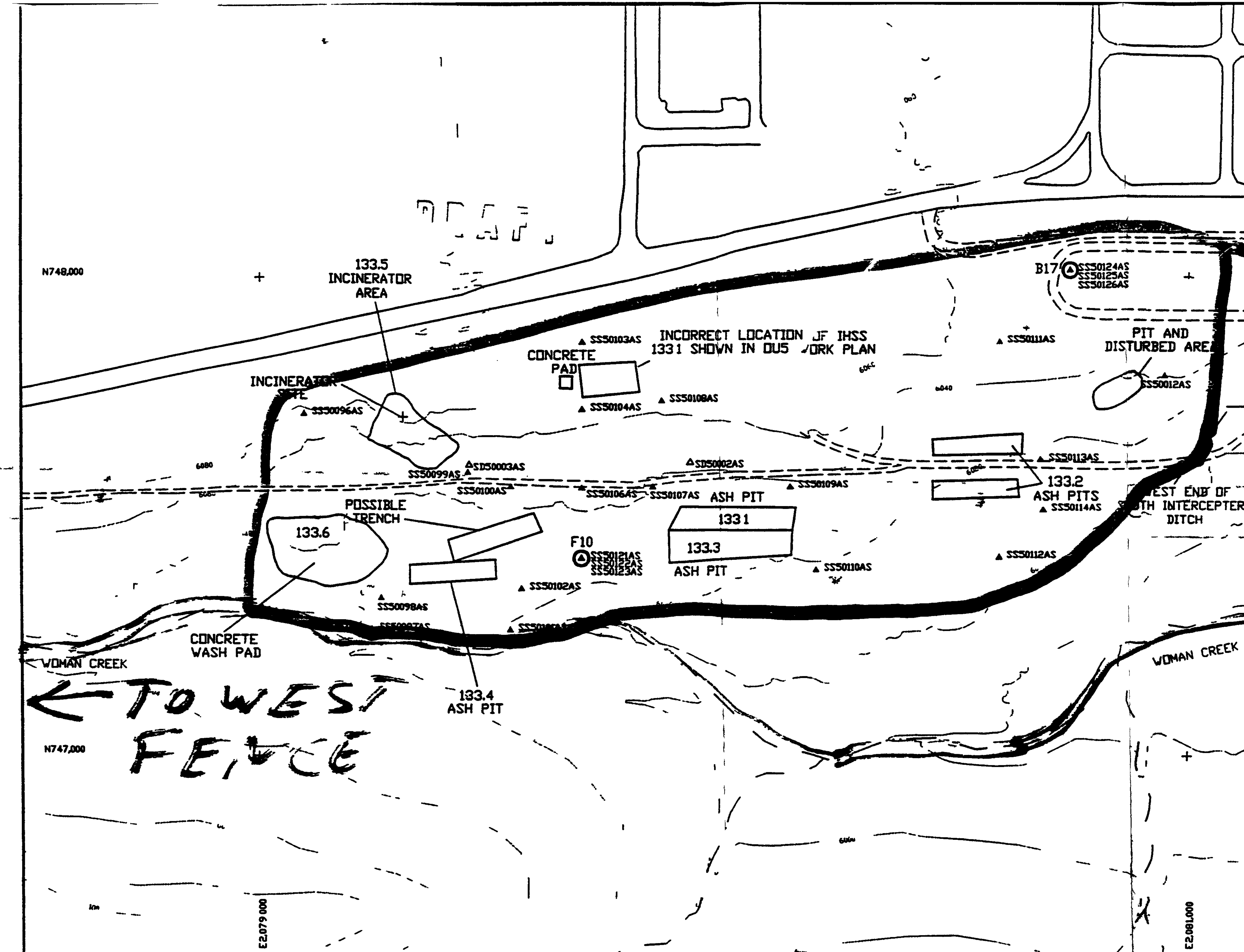
Constituent	Number of Samples	Percent Detect.	Maximum Concentration
Semi-Volatile Organic Compounds			
Acenaphthene	15	20	5 (ug/l)
Bis(2-ethylhexyl)phthalate	15	20	3 (ug/l)
Di-n-butly Phthalate	15	6 7	2 (ug/l)
Diethly Phthalate	15	6 7	6 (ug/l)
Fluoranthene	15	20	4 (ug/l)
Fluorene	15	20	4 (ug/l)
Naphthalene	17	11 8	13 (ug/l)
Phenanthrene	15	20	6 (ug/l)
Pyrene	15	20	6 5 (ug/l)
Volatile Organic Compounds			
Methylene chloride	21	4 8	6 (ug/l)

Stream Water Samples

Constituent	Number of Samples	Percent Detect.	Maximum Concentration
Semi-Volatile Organic Compounds			
Benzoic Acid	27	3 7	28 (ug/l)
Pentachlorophenol	27	3 7	5 (ug/l)
Volatile Organic Compounds			
Methylene Chloride	28	3.6	3 5 (ug/l)

Seep Water Samples

Constituent	Number of Samples	Percent Detect.	Maximum Concentration
Volatile Organic Compounds			
1,1,1-Trichloroethane	4	25	2 (ug/l)
1,1-dichloroethene	4	25	4 (ug/l)
1,2,dichloroethene	4	25	4 (ug/l)
Acetone	1	100	65 (ug/l)
Tetrachloroethene	4	25	28 (ug/l)
Trichloroethene	4	25	7 (ug/l)



Drawn	NM 5/11/94
Checked	TS7 5/11/94
Approved EG&G	Date
Approved DOE	Date

SEEP SEDIMENT AND SURFACE SOIL SAMPLE LOCATION MAP IHSS 133

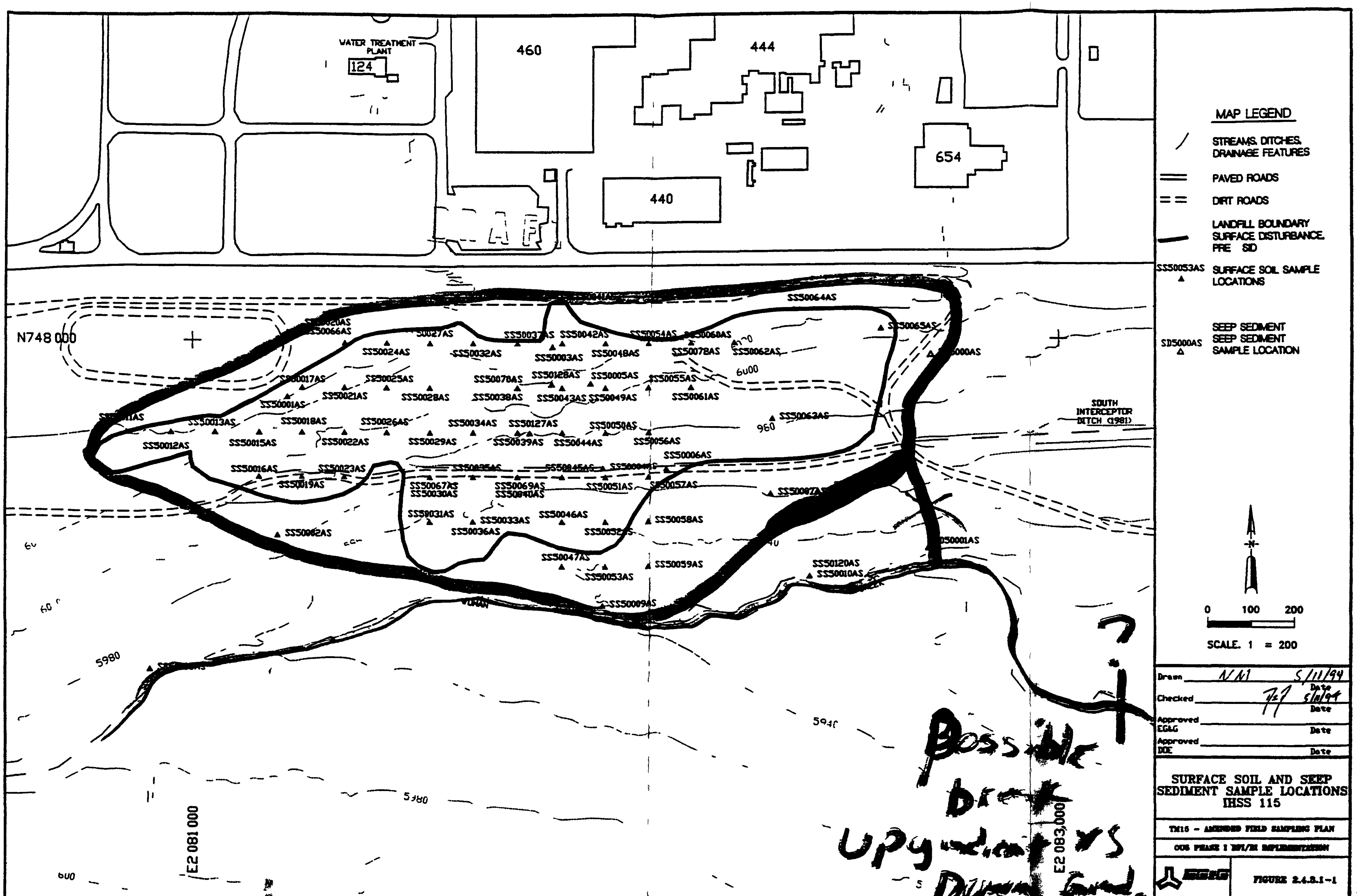
TM16 – AMENDED FIELD SAMPLING PLAN

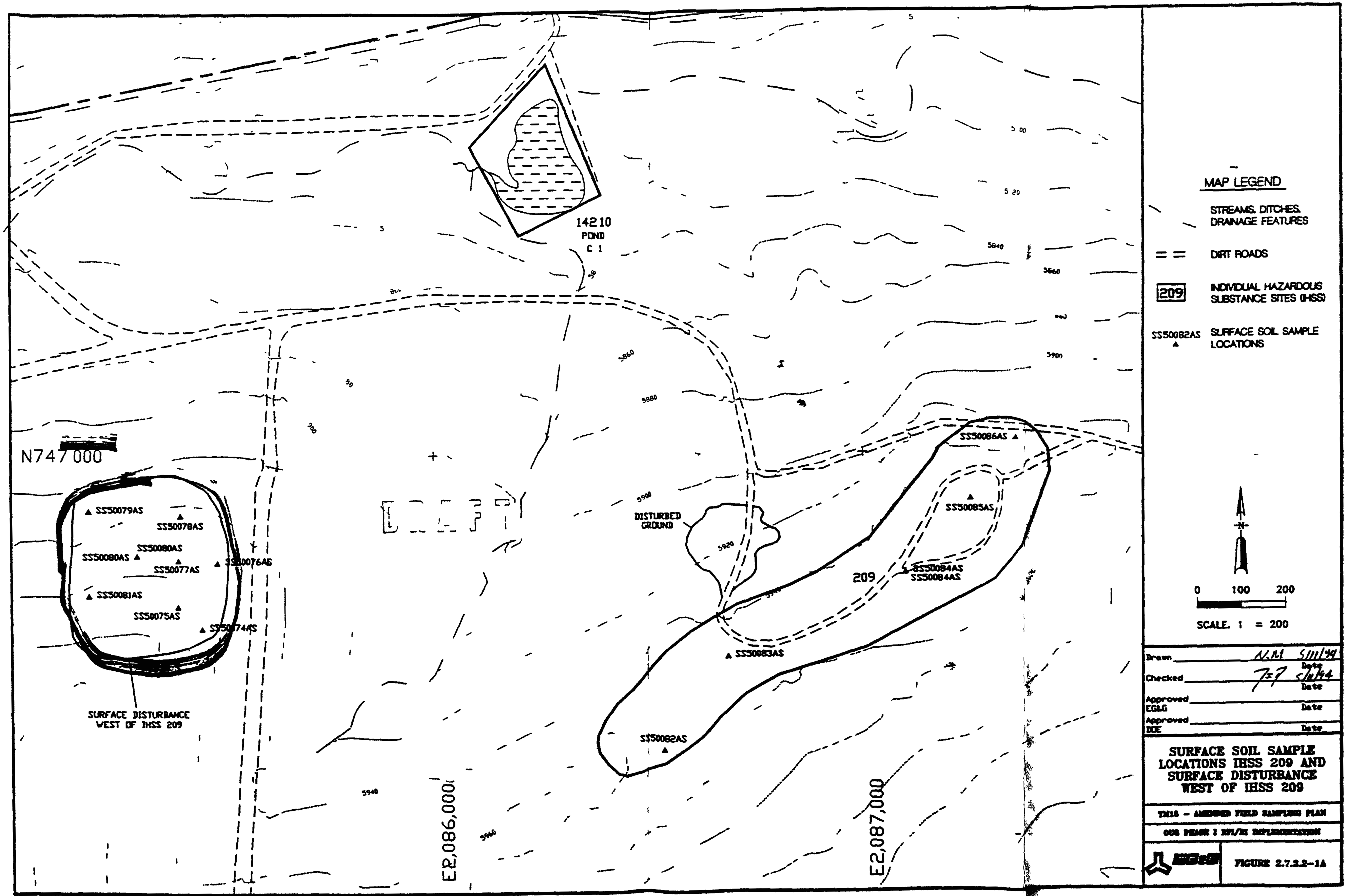
OU5 PHASE I RFI/RI IMPLEMENTATION

EG&G

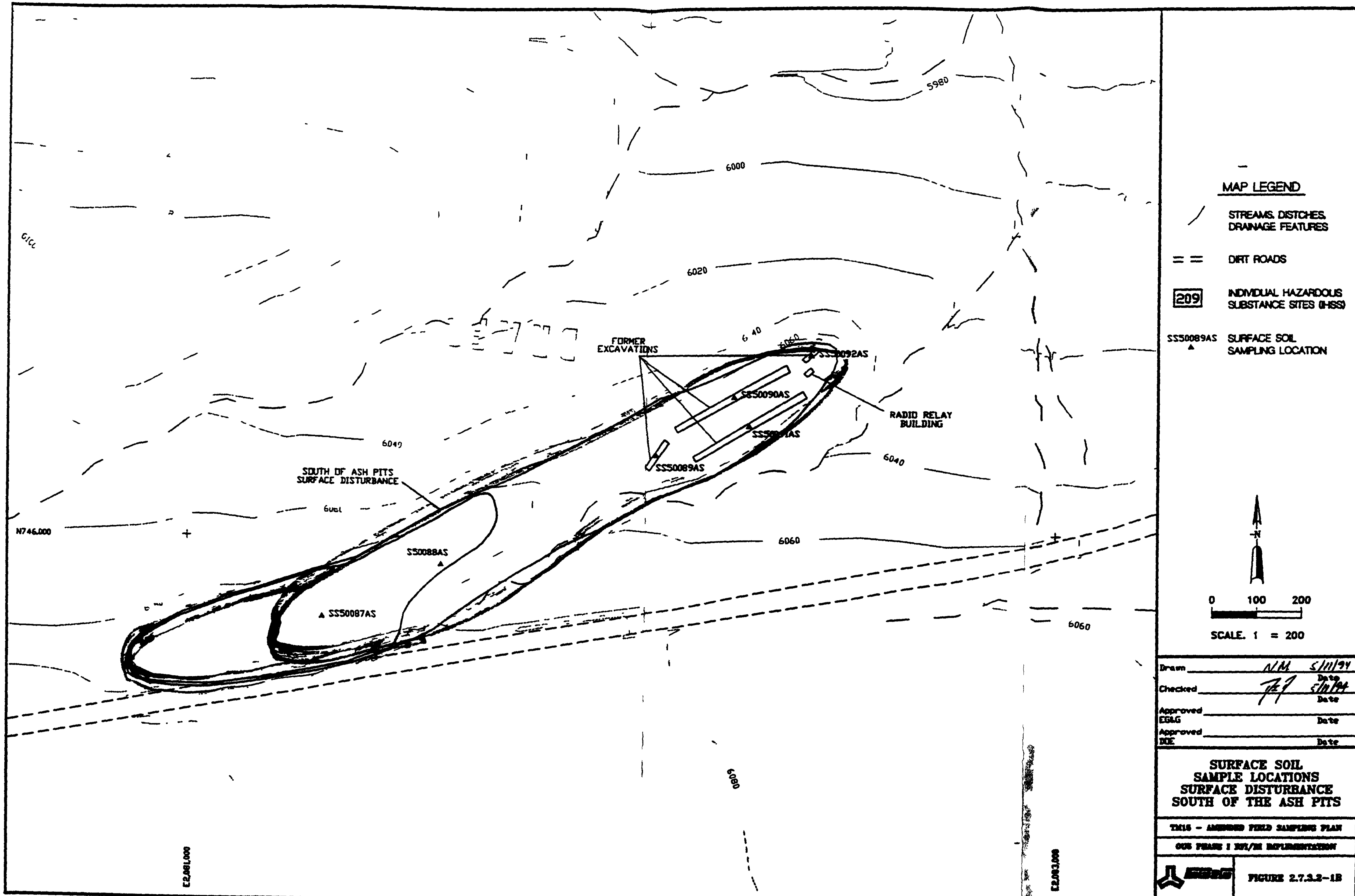
FIGURE 2.5.3.1-1

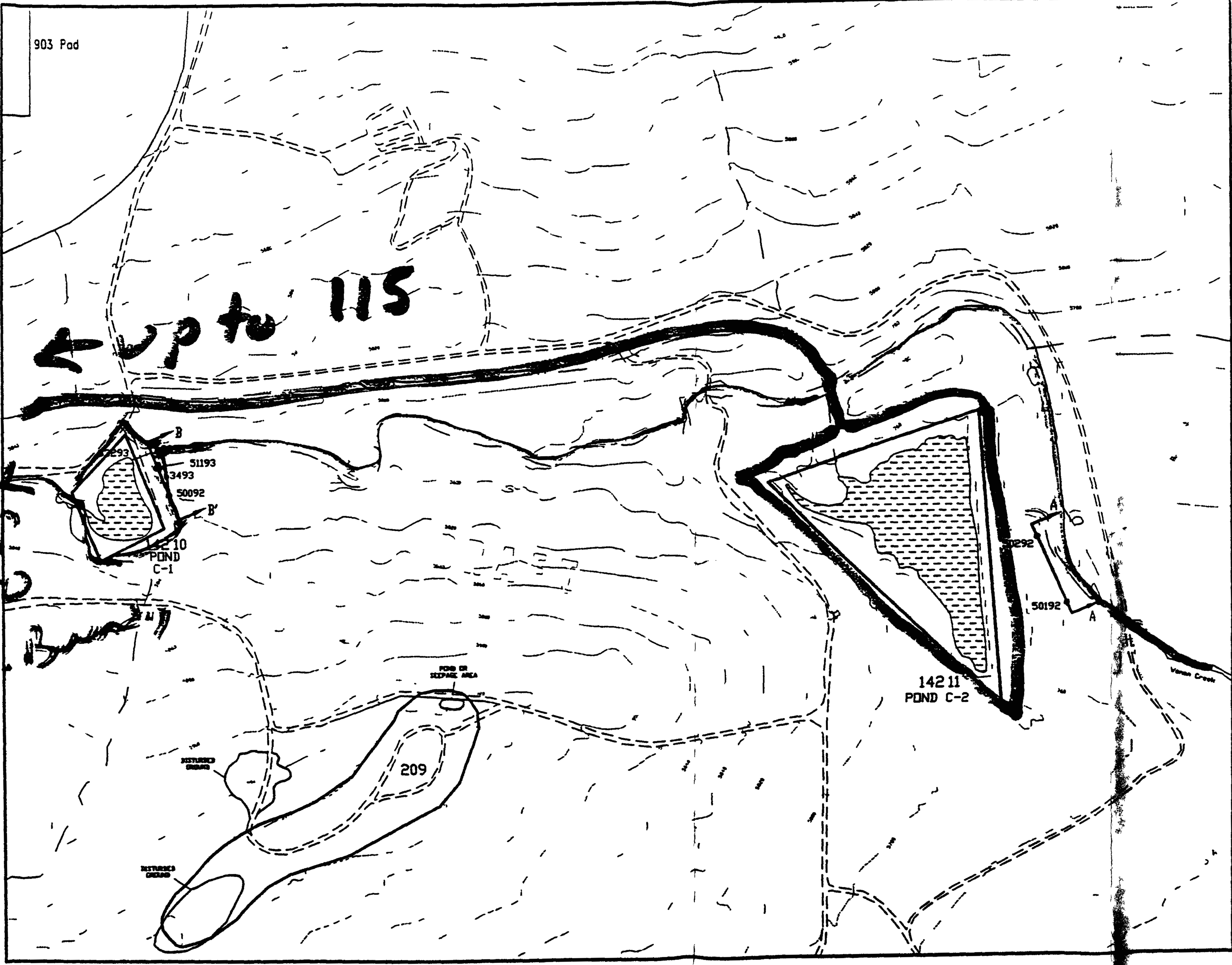
2531 I DWG


MAP LEGEND
STREAMS, DITCHES, DRAINAGE FEATURES
PAVED ROADS
DIRT ROADS
LANDFILL BOUNDARY SURFACE DISTURBANCE, PRE SID
SS50053AS SURFACE SOIL SAMPLE LOCATIONS
SD5000AS SEEP SEDIMENT SEEP SEDIMENT SAMPLE LOCATION
SCALE. 1 = 200
0 100 200
WATER TREATMENT PLANT
124
460
444
440
654
SOUTH INTERCEPTOR DITCH (1981)
N748 000
E2 081 000
E2 083,000
Drawn N M 5/11/94
Checked 5/11/94
Approved EG&G
Approved DOE
SURFACE SOIL AND SEEP SEDIMENT SAMPLE LOCATIONS IHSS 115
TM15 - AMENDED FIELD SAMPLING PLAN
OU6 PHASE I RFI/RI IMPLEMENTATION
EG&G
FIGURE 2.4.8.1-1
2431 | DVG
?
Possible break
Upgradient vs Down Gradient



MAP LEGEND
STREAMS, DITCHES, DRAINAGE FEATURES
DIRT ROADS
209 INDIVIDUAL HAZARDOUS SUBSTANCE SITES (IHSS)
SS50082AS SURFACE SOIL SAMPLE LOCATIONS
N
0 100 200
SCALE 1 = 200
14210
POND
C 1
N747 000
E2,086,000
E2,087,000
DISTURBED GROUND
209
SS50086AS
SS50085AS
SS50084AS
SS50084AS
SS50083AS
SS50082AS
SS50079AS
SS50078AS
SS50080AS
SS50080AS
SS50077AS
SS50076AS
SS50081AS
SS50075AS
SS50074AS
SURFACE DISTURBANCE WEST OF IHSS 209
5840
5860
5880
5900
5920
5940
5960
Drawn N.M 5/11/94
Checked Date 5/11/94
Date
Approved EG&G Date
Approved DOE Date
SURFACE SOIL SAMPLE LOCATIONS IHSS 209 AND SURFACE DISTURBANCE WEST OF IHSS 209
TM16 - AMENDED FIELD SAMPLING PLAN
OU6 PHASE I RFI/RI IMPLEMENTATION
EG&G
FIGURE 2.7.3.2-1A


5980
6000
6020
6040
6060
6080
FORMER EXCAVATIONS
SS50092AS
SS50090AS
SS50089AS
RADIO RELAY BUILDING
SOUTH OF ASH PITS SURFACE DISTURBANCE
SS50088AS
SS50087AS
N746,000
E2,081,000
E2,083,000
MAP LEGEND
STREAMS, DISTCHES, DRAINAGE FEATURES
DIRT ROADS
209
INDIVIDUAL HAZARDOUS SUBSTANCE SITES (IHSS)
SS50089AS
SURFACE SOIL SAMPLING LOCATION
N
0
100
200
SCALE: 1" = 200'
Drawn NM 5/11/94 Date
Checked 5/11/94 Date
Approved EG&G Date
Approved DOE Date
SURFACE SOIL SAMPLE LOCATIONS SURFACE DISTURBANCE SOUTH OF THE ASH PITS
TM15 - AMENDED FIELD SAMPLING PLAN
OU5 PHASE I RFI/RI IMPLEMENTATION
FIGURE 2.7.3.2-1B
2732 RDWG



MAP LEGEND

STREAMS, DITCHES, DRAINAGE FEATURES

PAVED ROADS

DIRT ROADS

SURFACE WATER IMPOUNDMENTS

142 INDIVIDUAL HAZARDOUS SUBSTANCE SITES

51193 WELL LOCATION

63393 WELL POINTS

CROSS SECTION LOCATION

N

0 150 300

SCALE. 1 = 300

Drawn N M 5/11/94	
Checked [illegible]	Date 5/11/94
	Date
Approved EG&G	Date
Approved DOE	Date

MONITORING WELL LOCATION MAP IHSS 142

TM16 - AMENDED FIELD SAMPLING PLAN

OU5 PHASE I RFI/RI IMPLEMENTATION

FIGURE 2.6.3 1-1